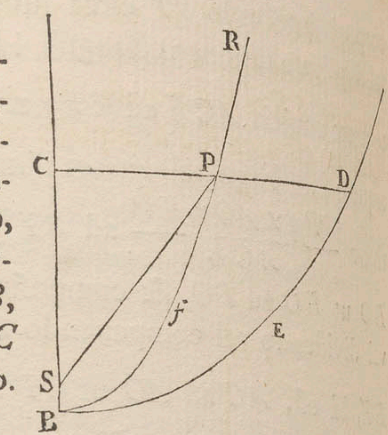
prop. xvi.) æqualis eſt velocitati corporis dimidio intervalli SP circulum circa idem centrum S uniformiter deſcribentis. Minuatur parabolæ latitudo CP in infinitum eo, ut arcus parabolicus PfB cum recta CB, centrum S cum vertice B, & intervallum SP cum intervallo BC coincidat, & conſtabit propoſitio. *Q. E. D.*



PROPOSITIO XXXV. THEOREMA XI.

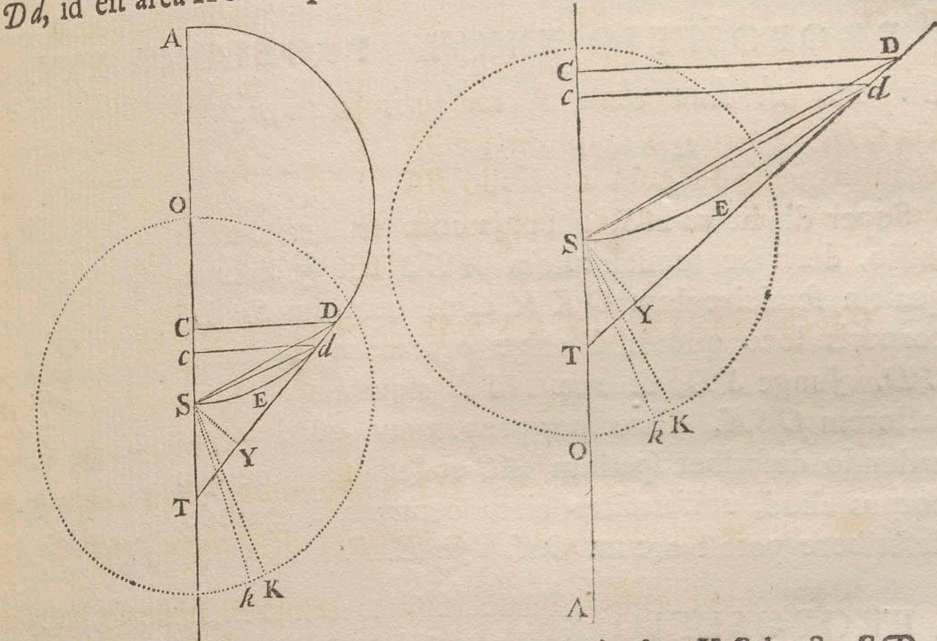
Iiſdem poſitis, dico quod area figuræ DES, *radio indefinito* SD *deſcripta, æqualis ſit areæ quam corpus, radio dimidium lateris recti figuræ* DES *æquante, circa centrum* S *uniformiter gyrando, eodem tempore deſcribere poteſt.*

Nam concipe corpus C quam minima temporis particula lineolam Cc cadendo deſcribere, & interea corpus aliud K, uniformiter in circulo OKk circa centrum S gyrando, arcum Kk deſcribere. Erigantur perpendicula CD, cd occurrentia figuræ DES in D, d. Jungantur SD, Sd, SK, Sk & ducatur Dd axi AS occurrens in T, & ad eam demittatur perpendiculum SY.

Caſ. 1. Jam ſi figura DES circulus eſt vel hyperbola rectangula, biſecetur ejus tranſverſa diameter AS in O, & erit SO dimidium lateris recti. Et quoniam eſt TC ad TD ut Cc ad Dd, & TD ad TS ut CD ad SY, erit ex æquo TC ad TS ut $CD \times Cc$ ad $SY \times Dd$. Sed (per corol 1. prop. xxxiii.) eſt TC ad TS ut AC ad AO, puta ſi in coitu punctorum D, d capiantur linearum rationes ultimæ. Ergo AC eſt ad AO ſeu SK ut $CD \times Cc$ ad $SY \times Dd$. Porro corporis deſcendentis velocitas in C eſt ad velocitatem corporis circulum intervallo SC circa centrum S deſcribentis in ſubduplicata ratione AC ad AO vel SK (per prop. xxxiii.) Et hæc velocitas ad velocitatem corporis deſcribentis circulum OKk in ſubduplicata ratione SK ad SC (per corol. vi. prop. iv.) & ex æquo velocitas prima ad ultimam, hoc eſt lineola Cc ad arcum Kk in ſubduplicata

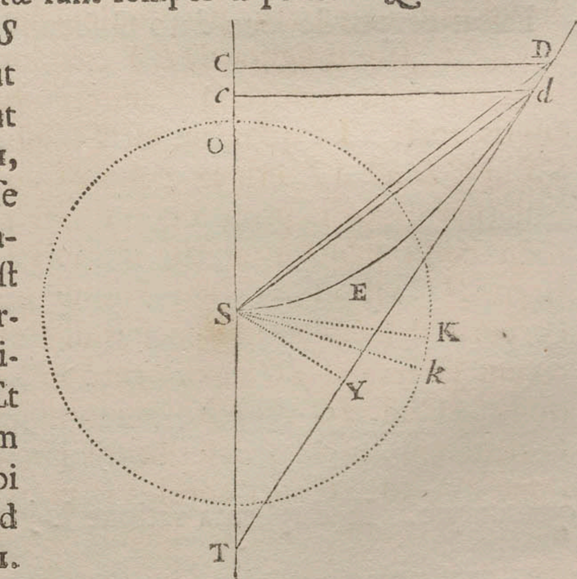
ratione

ratione AC ad SC, id eſt in ratione AC ad CD. Quare eſt $CD \times Cc$ æquale $AC \times Kk$, & propterea AC ad SK ut $AC \times Kk$ ad $SY \times Dd$, indeque $SK \times Kk$ æquale $SY \times Dd$, & $\frac{1}{2} SK \times Kk$ æquale $\frac{1}{2} SY \times Dd$, id eſt area KSk æqualis areæ SDd. Singulis igitur temporis



particulis generantur arearum duarum particulæ KSk, & SDd, quæ, ſi magnitudo earum minuatur & numerus augeatur in infinitum, rationem obtinent æqualitatis, & propterea (per corollarium lemmatis iv.) areæ totæ ſimul genitæ ſunt ſemper æquales. *Q. E. D.*

Caſ. 2. Quod ſi figura DES parabola ſit, invenietur eſſe ut ſupra $CD \times Cc$ ad $SY \times Dd$ ut TC ad TS, hoc eſt ut 2 ad 1, ideoque $\frac{1}{4} CD \times Cc$ æquale eſſe $\frac{1}{2} SY \times Dd$. Sed corporis cadentis velocitas in C æqualis eſt velocitati qua circulus intervallo $\frac{1}{2} SC$ uniformiter deſcribi poſſit (per prop. xxxiv.) Et hæc velocitas ad velocitatem qua circulus radio SK deſcribi poſſit, hoc eſt, lineola Cc ad arcum Kk (per corol. vi.



prop.